

CLAIMS

1.

A method of forming a platinum aluminide diffusion barrier on a metallic substrate which comprises a titanium alloy, the method comprising the steps of:

- a) applying to the metallic substrate a coating comprising particulate platinum and particulate aluminium in an organic carrier;
- b) performing a reaction treatment on the thus applied platinum and aluminium which comprises subjecting the platinum particles and the aluminium particles to a temperature in the range of about 200°C to about 600°C for a time sufficient for the reaction between the platinum and the aluminium to form a diffusion barrier on the metallic substrate.

2. A method according to claim 1, wherein the reaction treatment takes place in an inert atmosphere.

3. A method according to claim 1, wherein the coating is applied in more than one step, whereby the coating is built up on the metallic substrate.

4. A method according to claim 1, wherein the platinum particles and the aluminium particles are applied as the particles entrained in the organic carrier, as a single composition or sequentially as separate compositions.

5. A method according to claim 1, wherein the organic carrier comprises relatively volatile components and relatively non-volatile components, whereby the organic carrier forms a dry residue on the metallic substrate after application, anchoring the platinum particles and the aluminium particles for the reaction treatment to form the diffusion barrier.

6. A method according to claim 1, wherein the aluminium particles have an average effective diameter in the range of about 2 to about 10 μ m.
7. A method according to claim 1 of the preceding claims, wherein the platinum particles have an average effective diameter in the range of about 2 to about 10 μ m.
8. An oxidation resistant structure comprising a metallic substrate which comprises a titanium alloy and a platinum aluminide diffusion barrier disposed thereon, wherein the structure is formed by a method according to claim 1.
9. A structure according to claim 8, wherein the platinum aluminide diffusion barrier has a substantially uniform thickness over the major part of its area.
10. A structure according to claim 8, which comprises an aerospace component or a portion thereof.
11. A structure according to any one of claim 8, wherein the platinum aluminide diffusion barrier has a thickness in the range of about 2 to about 10 μ m.
12. An oxidation resistant aerospace component comprising a metallic substrate which comprises a titanium alloy and a substantially uniform platinum aluminide diffusion barrier disposed thereon said diffusion barrier being formed by a method according to claim 1.
13. An oxidation resistant aerospace component as claimed in claim 12 wherein the diffusion barrier is continuous over an area of at least about 200cm².
14. A component according to claim 12 wherein the platinum aluminide diffusion barrier has a thickness in the range about 2 to about 10 μ m.